Test Definition: SCCA

Squamous Cell Carcinoma Antigen, Serum

Overview

Useful For

Aiding in the evaluation and monitoring of squamous cell carcinoma of the head and neck, lung, and cervix

This test **should not be used** to screen for carcinoma or other disorders including those of the liver, lung, or skin.

Highlights

In conjunction with clinical evaluation, squamous cell carcinoma antigen measurement may have utility as a nonspecific tumor marker for the presence and monitoring of various squamous cell carcinomas, including those of the head and neck, esophagus, cervix, and lung.

Method Name

Immunofluorescent Assay (IFA)

NY State Available

Yes

Specimen

Specimen Type

Serum SST

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube: Serum gel
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL
Collection Information: Centrifuge and aliquot serum into a plastic vial. **Do not submit in original tube**.

Specimen Minimum Volume

0.2 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK
Gross icterus	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum SST	Frozen (preferred)	90 days	
	Ambient	7 days	
	Refrigerated	7 days	

Clinical & Interpretive

Clinical Information

Squamous cell carcinoma (SCC) of the skin is the second most common form of skin cancer, characterized by abnormal, accelerated cellular growth. SCC antigen (SCCA) represents a subfraction of tumor-associated antigens related to squamous cell carcinoma and is used as a serum tumor marker for squamous cell carcinoma of the head and neck, lung (including esophagus), and other types of SCC. Additionally, associations between serum SCCA concentrations and tumor stage, size, and progression have been observed in SCCs of the cervix and esophagus. SCC is the most common histological type of cervical cancer, accounting for more than 70% of cervical cancer cases in the US.

Squamous cell carcinoma antigen is a cytoplasmic glycoprotein found in normal squamous epithelia and elevated concentrations in serum from patients with SCCs. SCCA exists as two isoforms, SCCA1 and SCCA2, which are 91% identical at the amino acid level. Total SCCA assays (which measure both SCCA 1 and 2), like this assay, may be used in conjunction with clinical evaluation in the follow-up/monitoring of patients with SCC of the cervix, lung, head and neck, and esophagus.

Serum concentrations of SCCA may be used for monitoring response to treatment in patients with cervical cancer. Notably, in 46% to 92% of patients who experience recurrence, an elevated level of SCCA after treatment was observed before the clinical manifestation of relapse, with a median lead time of 2 to 8 months. While pretreatment serum SCCA concentrations in patients with cervical cancer are more correlated with tumor burden and prognosis, there is some evidence that it may also help to differentiate patients with and without risk for lymph node metastasis. Furthermore, it has been shown that SCCA is a useful marker in follow-up and therapy monitoring, and increasing SCCA levels may predict relapse.

Increased serum SCCA values have also been associated with benign inflammatory diseases, including various skin disorders, such as psoriasis and atopic dermatitis, in addition to inflammatory disorders, such as asthma. In one report, 70% of patients with psoriasis and dermatitis had SCCA concentrations greater than 2.4 ng/mL (radioimmunoassay reference value), with some patients having SCCA concentrations between 20 and 60 ng/mL. Another study found that median concentrations of SCCA2 were higher in psoriasis (2.7 ng/mL, interquartile range: 1.25-7.75 ng/mL) than in controls (0.7 ng/mL, interquartile range: 0.40-0.80 ng/mL).

Reference Values

Males: < or =2.00 mcg/L
Females: < or =1.67 mcg/L

Reference values have not been established for patients younger than 18 years.

Interpretation

Squamous cell carcinoma antigen (SCCA) concentrations alone should not be interpreted as evidence of the presence or

absence of malignancy. Although the sensitivity of this assay for the presence of squamous cell carcinoma (SCC) is not ideal, SCCA remains one of the few clinically viable potential circulating markers used for the detection and monitoring of SCC. Previous estimates of sensitivity are 20% to 53% for lung SCC(1,2) and 38% for tonsil and tongue SCC.(3) In a previous study, SCCA was elevated (>2 ng/ml) in 21.6% of untreated cervical squamous cell carcinomas.(4) Serum levels of SCCA in cervical cancer were significantly related to tumor stage, size, and depth of infiltration(5) and may also serve as a prognostic predictor of overall outcome.(6)

Squamous cell carcinoma antigen is expressed in normal epithelial tissues and may be elevated in nonmalignant conditions such as tuberculosis, sarcoidosis, eczema, erythroderma, and psoriasis. Psoriasis, in particular, is known to exhibit elevated SCCA concentrations. Additionally, serum concentrations of squamous cell carcinoma antigen have been reported to be elevated in severe cases of atopic dermatitis and asthma. Although there are conflicting reports, SCCA has been shown to be elevated in hepatocellular carcinoma (HCC) and may serve as a potential marker of HCC. A study of 961 patients (HCC, n =499)(7) indicated that at a serum SCCA cut-off of 3.8 ng/mL, sensitivity was 42% with a specificity of 83% for patients with HCC.

This Brahms Kryptor total SCCA assay detects both SCCA1 and SCCA2 antigen isoforms with a 90% and 72% measured recovery, respectively.

Cautions

Do not interpret serum squamous cell carcinoma antigen (SCCA) concentrations as absolute evidence of the presence or the absence of malignant disease. Use serum SCCA results in conjunction with information from the clinical evaluation of the patient and other diagnostic procedures.

Elevated concentrations may also occur in cases of kidney insufficiency, skin disorders such as psoriasis, or inflammatory lung disease such as asthma.

Samples with extremely elevated SCCA concentrations (>2200 mcg/L) have the potential to exhibit a "hook effect" and appear to have markedly lower SCCA concentrations in the absence of specimen dilution.

In rare cases, some individuals can develop antibodies to mouse or other animal antibodies (often referred to as human anti-mouse antibodies [HAMA] or heterophile antibodies), which may cause interference in some immunoassays. Caution should be used in interpretation of results, and the laboratory should be alerted if the result does not correlate with the clinical presentation.

Squamous cell carcinoma antigen concentration determinations are method dependent. Values obtained with different assay methods or kits may be different and cannot be used interchangeably.

Clinical Reference

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Performance

Method Description

Squamous cell carcinoma antigen (SCCA) is measured by homogeneous automated immunofluorescent assay on the BRAHMS Kryptor Compact PLUS. The Kryptor Compact PLUS uses time resolved amplified cryptate emission (TRACE) technology based on a nonradioactive transfer of energy. This transfer occurs between two-fluorescent tracers: the donor (europium cryptate) and the acceptor (Alexa Fluor 647). In the SSCA assay, an anti-SCC monoclonal mouse antibody is labeled with europium cryptate, and an anti-SCC mouse monoclonal antibody is labeled with Alexa Fluor 647.

SSCA is sandwiched between the two antibodies, bringing them into close proximity. When the antigen-antibody complex is excited with a nitrogen laser at 337 nm, some fluorescent energy is emitted at 620 nm, and the rest is transferred to Alexa Fluor 647. This energy is then emitted as fluorescence at 647 nm. A ratio of the energy emitted at 647 nm to that emitted at 620 nm (internal reference) is calculated for each sample. Signal intensity is proportional to the number of antigen-antibody complexes formed and, therefore, to antigen concentration.(Unpublished Mayo method)

PDF Report
No

Day(s) Performed
Tuesday

Report Available
Same day/1 day to 7 days

Specimen Retention Time
2 weeks

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Superior Drive

Fees & Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification
This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information
86316

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
SCCA	Squamous Cell Carcinoma Antigen, S	9679-2

Result ID	Test Result Name	Result LOINC® Value
SCCA	Squamous Cell Carcinoma Antigen, S	9679-2